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| Time: 20 Minutes | (OBJECTIVE TYPE) | Marks: 17 |
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**Note:** Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

- 1-1-  **$[M^0 L^0 T^{-1}]$  refer to quantity:**
  - (a) Velocity
  - (b) Frequency ✓
  - (c) Time period
  - (d) Force
- 2- **The dimensions of torque are:**
  - (a)  $[MLT^{-2}]$
  - (b)  $[ML^{-1} T^{-2}]$
  - (c)  $[ML^{-1} T^{-1}]$
  - (d)  $[ML^2 T^{-2}]$  ✓
- 3- **Position vector of a point in x-z plane is given by:**
  - (a)  $\hat{y}\hat{i} + \hat{z}\hat{k}$
  - (b)  $\hat{x}\hat{i} + \hat{y}\hat{k}$
  - (c)  $\hat{x}\hat{i} + \hat{z}\hat{k}$  ✓
  - (d)  $\hat{x}\hat{i} + \hat{y}\hat{j} + \hat{z}\hat{k}$
- 4- **Which of the following is the only scalar quantity?**
  - (a) Energy ✓
  - (b) Velocity
  - (c) Force
  - (d) Torque
- 5- **SI unit of impulse is equivalent to:**
  - (a) Force
  - (b) Momentum ✓
  - (c) Torque
  - (d) Velocity
- 6- **The horizontal range of a projectile is:**
  - (a)  $\frac{2v_i \sin \theta}{g}$
  - (b)  $\frac{v_i^2 + \sin^2 \theta}{2g}$  ✓
  - (c)  $\frac{v_i^2 \sin 2\theta}{g}$
  - (d)  $\frac{v_i \sin^2 \theta}{2g}$

7- Kilowatt hour is the unit of:  
(a) Power ✓ (b) Work  
(c) Force (d) Momentum

8- One radian is equal to:  
(a)  $57.3^\circ$  ✓ (b)  $67.3^\circ$   
(c)  $87.3^\circ$  (d)  $60^\circ$

9- The angular displacement per second is called angular:  
(a) Acceleration ✓ (b) Rotation  
(c) Velocity (d) Speed

10- Venturi meter is a device used to measure:  
(a) Density of fluid (b) Speed of fluid ✓  
(c) Viscosity of fluid (d) Pressure of fluid

11- If length of the simple pendulum is double, then its period increases:  
(a) 1.44 times ✓ (b) 2 times  
(c) 2.4 times (d) 3 times

12- The number of nodes between two consecutive antinode is:  
(a) 1 ✓ (b) 2  
(c) 3 (d) Zero

13- If 20 waves pass through the medium in 1 second with speed of  $20 \text{ ms}^{-1}$ , then the wavelength is:  
(a) 20 m (b) 10 m  
(c) 2 m (d) 1 m ✓

14- Bragg's equation is given by:  
(a)  $d = \frac{2 \sin \theta}{n\lambda}$  (b)  $n = \frac{2d \sin \theta}{\lambda}$  ✓  
(c)  $d = \frac{2n \sin \theta}{\lambda}$  (d)  $d = \frac{2\lambda \sin \theta}{n}$

15- For normal adjustment, length of telescope is:

(a)  $f_o + f_e$  ✓      (b)  $f_o - f_e$   
(c)  $\frac{f_o}{f_e}$       (d)  $\frac{f_e}{f_o}$

16- Pressure of an ideal gas can be written in terms of its density:

(a)  $P = \rho \langle v^2 \rangle$       (b)  $P = \frac{1}{3} \rho \langle v^2 \rangle$  ✓  
(c)  $P = \frac{2}{3} \rho \langle v^2 \rangle$       (d)  $P = \frac{1}{2} \rho \langle v^2 \rangle$

17- The efficiency of a carnot engine is:

(a) Infinite  
(b) Zero  
(c) Greater than one ✓  
(d) Less than one

